REMARKS

Claim 1 is amended to include the limitations of claim 21, now canceled. Claims 1-4 and 6-20 remain for consideration. Reconsideration and allowance of the application is respectfully requested.

The Office Action fails to establish that claims 1-4, 6-12, 14 and 17-20 are unpatentable under 35 U.S.C. 103(a) over "White" ("Reconfigurable, Retargetable Bignums" by White) in view of "Hardy" (U.S. Patent No. 5,640,496 to Hardy et al.). The rejection is respectfully traversed because the Office Action fails to show that all the limitations are suggested by the references and fails to provide a proper motivation for modifying the teachings of White with teachings of Hardy.

As to claim 1, the Office Action does not show that all the limitations are taught by the White-Hardy combination. For example, claim 1 includes limitations of establishing a plurality of available storage nodes available for allocation to large-integer data; and allocating a subset of the plurality of available storage nodes for a large-integer variable, the subset being an allocated plurality of storage nodes, and storing a numerical value in the allocated plurality of storage nodes and forming a linked list of the allocated plurality of storage nodes. The claim clearly indicates that a numerical value is stored in an allocated plurality of storage nodes which are formed into a linked list.

The cited teachings of Hardy neither teach nor suggest these limitations. There is no apparent reference in Hardy to a single numerical value being stored in a linked list of nodes as claimed. Furthermore, Hardy's image data overlay management system teaches that each node on Hardy's linked list of pixel value nodes stores a value. The values on Hardy's linked list of pixel value nodes may be processed to determine the cumulative color for the pixel (col. 5, l. 50-53; col. 8, l. 45-50; col. 10, l. 38-45). Thus, the Office Action does not show that Hardy teaches or suggests the claimed storing of a numerical value in the allocated plurality of storage nodes.

The limitations of claim 18 are similarly not shown to be suggested by Hardy.

The alleged motivation for combining Hardy with White is conclusory and improper. The alleged motivation states that "it would have been obvious ... to use Hardy's methods of memory allocation/deallocation (col. 8, lines 4-27) with White's invention (pg. 176, col. 2, par. 3) to provide memory space for White's Bignums (pg. 177, par. 1 'Bignums are allocated in units of at least one 32-bit word') because one of ordinary skill in the art would have been motivated to provide an efficient memory management system (Hardy col. 8, line 4 'memory must be managed efficiently') to support White's disclosure of memory allocation (pg. 176, col. 2, par. 3). There is no evidence to support the allegation that Hardy's linked list of nodes would make White more efficient. For example, there is no evidence presented to indicate that White's implementation has any lesser relative efficiency than would White's system with a linked list of nodes. Furthermore, Hardy's teachings that each node in a linked list contains a respective value (col. 5, l. 50-53; col. 8, l. 45-50; col. 10, l. 38-45), which teaches away from the claim limitations. Therefore, the White-Hardy combination is a hindsight-based reconstruction of the invention, unsupported by evidence, and therefore, improper.

Claims 2-6 depend from claim 1 and are not shown to be unpatentable over the White-Hardy combination for at least the reasons set forth above.

Claim 7 includes limitations of dynamically allocating a number of storage nodes for storage of the numerical value as a function of a size of the numerical value. These limitations are not shown to be suggested by the White Hardy combination. White teaches allocation of at least one 32-bit word for a Bignum, and Hardy teaches an allocation of a linked list of pixel value nodes that provides a static number of overlays. Thus, the White-Hardy combination does not suggest a dynamic allocation of a number of storage nodes to accommodate a given numerical value.

Claim 8 depends from claim 7 and is not shown to be unpatentable over the White-Hardy combination for at least the reasons set forth above.

Claim 9 further refines the limitations directed to the management of the storage nodes for a large-integer variable and is not shown to be unpatentable over the White-Hardy combination for at least the reasons set forth above.

As to claim 10, the Office Action fails to show that the limitations are inherent in

White. The Office Action fails to provide any evidence of inherency that language-provided memory allocation and deallocation operators are overloaded as claimed; the Office Action relies instead on White's apparent overloading of arithmetic operators. The overloading of arithmetic operators does not necessarily imply the overloading of language-provided memory allocation and deallocation operators as claimed. Thus, claim 10 is not shown to be unpatentable over the White-Hardy combination.

Claim 11 depends from claim 1 and is not shown to be unpatentable for at least the reasons set forth above. Furthermore, claim 11 calls out two steps of recursively performing a large-integer divide operation on different portions of the dividend. It is respectfully submitted that the Brooks' teaching does not show recursion as understood by those skilled in the art. Brooks' Fig. 7 and step D7 show and describe a program loop, and program D on page 259 is assembly language in which there is no apparent recursion. Furthermore, two recursion steps are claimed for different parts of the dividend, whereas Brooks shows a single loop.

Claim 12 depends from claim 11 and is not shown to be unpatentable for at least the reasons set forth above.

Claims 14 and 17 depend from claim 1, and claim 20 depends from apparatus claim 18. Thus, these claims are not shown to be unpatentable for at least the reasons set forth above.

The rejection of claims 1-4, 6-12, 14 and 17-20 should be withdrawn because a *prima facie* case of obviousness has not been established.

The Office Action fails to establish that claim 13 is unpatentable under 35 U.S.C. 103(a) over the White-Hardy combination further in view of "Burnikel" ("Fast Recursive Division" by Burnikel et al.). The rejection is respectfully traversed because the Office Action fails to show that all the limitations are suggested by the references and fails to provide a proper motivation for modifying the teachings of the White-Hardy combination with teachings of Burnikel. Claim 13 depends from claim 1 by way of claims 11 and 12. Thus, the limitations of claim 13 are not shown to be suggested by the White-Hardy-Burnikel combination. The alleged motivation for combining Burnikel with the White-Hardy combination is conclusory and improper. Therefore, the Office Action fails to

establish a *prima facie* case of obviousness of claim 13.

The Office Action fails to establish that claims 15-16 and 19 are unpatentable under 35 U.S.C. 103(a) over the White-Hardy combination further in view of "Anderson" (U.S. Patent No. 5,619,711 to Anderson). The rejection is respectfully traversed because the Office Action fails to show that all the limitations are suggested by the references and fails to provide a proper motivation for modifying the teachings of the White-Hardy combination with teachings of Anderson.

Claim 15 depends from claim 1 and includes limitations of transferring data associated with temporary variables of the large-integer datatype by moving pointers to the data. The cited portion of Anderson suggests a linked list for storage of an array and apparently teaches away from the desirability of the claimed transferring by moving pointers. Specifically, Anderson teaches "copying of an APN to new memory area is more complex for linked structures." Thus, Anderson appears to suggest that transferring data by moving pointers to the data.

The alleged motivation for modifying White with teachings of Anderson is unsupported by evidence and improper. The alleged motivation states that "it would have been obvious ... to utilize the techniques taught in Anderson ... when updating large-integer-data as disclosed in White ... to avoid fragmentation as taught in Anderson." The Office Action fails to present any evidence that White is susceptible to fragmentation. Therefore, the alleged motivation is conclusory and improper.

Claim 16 depends from claim 1, and claim 19 depends from claim 18. Thus, the Office Action does not establish that claims 16 and 19 are unpatentable for at least the reasons set forth above for claim 1 over the White-Hardy combination.

The rejection of claims 1-4, 6-12, 14 and 17-20 should be withdrawn because a *prima facie* case of obviousness has not been established.

The Office Action fails to establish that claim 21 is unpatentable under 35 U.S.C. 103(a) over the White-Hardy combination further in view of "Carey" (U.S. Patent No. 6,078,994 to Carey). The rejection is respectfully traversed because the Office Action fails to show that all the limitations are suggested by the references and fails to provide

a proper motivation for modifying the teachings of the White-Hardy combination with teachings of Carey.

Claim 21 is canceled, and the limitations are now included in amended claim 1. The limitations that are not show to be suggested by Carey include determining a total number of available storage nodes available for allocation to large-integer data; allocating memory for a first number of available storage nodes, responsive to the total number being less than first threshold value, and establishing the first number of available storage nodes; and removing from the plurality of available storage nodes, responsive to the total number being greater than a second threshold value, a second number of storage nodes and deallocating memory for the second number of storage nodes.

Carey is not shown to teach either the allocating or deallocating of memory to storage nodes responsive to the threshold values. Carey moves used pages from a cache back to a free list. Carey teaches a system in which data retrieved from mass storage is stored in a page buffer for access by users-sessions (col. 5, l. 1-4). A collector thread is used to manage page removal from a cache memory area (col. 7, l. 22-26). The collector thread selectively removes pages from the cache and places the pages back on the free list once the number of free pages meets a minimum threshold (col. 7, l. 40 - col. 8, l. 60) in order to minimize processing delays when a page is needed for storing data from mass storage. Thus, the memory is already allocated to the pages and there is no need to allocate further memory since the pages are moved from the cache back to the free list. Once the number of pages on the free list is above a preset maximum threshold, the collector thread suspends itself. Read or write operations in Carey's system appear to consume pages from the free list, not Carey's collector thread. Thus, Carey's system does not appear to perform any deallocation of memory from the free list once the maximum threshold is reached (pages move from the free list to the cache by being used, not by deallocation of memory). The claim limitations clearly indicate that storage nodes are removed from the plurality of available storage nodes, responsive to the total number being greater than a second threshold value, and that memory for the removed nodes is deallocated. Carey is not shown to teach these limitations.

The alleged motivation for combining Carey with the White-Hardy combination is conclusory and improper. Furthermore, combining Carey's teachings with Hardy's system would appear to render Hardy's system unsuitable for its intended purpose. When one of Hardy's nodes is in use, that node would not appear to be eligible for return to the free list as suggested by Carey. To return a used one of Hardy's nodes to the free list as taught by Carey would appear to destroy data needed for the image overlay. Thus, Carey's teachings would frustrate the purpose of Hardy's system. Thus, the alleged motivation for combining Carey with the White-Hardy combination is conclusory and improper.

The rejection of claim 21, whose limitations are now in amended claim 1, should be withdrawn because a *prima facie* case of obviousness has not been established.

No extension of time is believed to be necessary for consideration of this response. However, if an extension of time is required, please consider this a petition for a sufficient number of months for consideration of this response. If there are any additional fees in connection with this response, please charge Deposit Account No. 50-0996 (USYS.030PA).

Respectfully submitted,

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